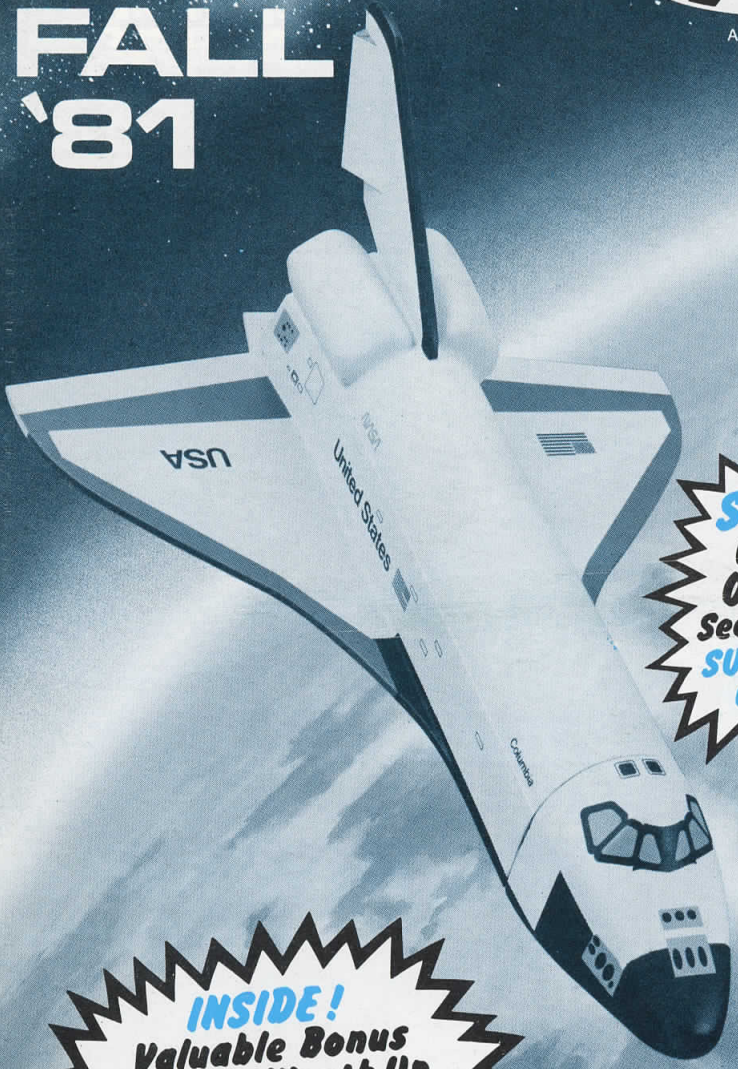
FLYING MODEL ROCKETS FALL '81

ESTES

A DAMON COMPANY



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NEW! SPACE SHUTTLE COLUMBIA

SKILL LEVEL 2

Dramatic semi-scale model of the first Shuttle to fly in Space. Exciting flights over 500 feet and returns to Earth via big 18" recovery parachute. Includes 4-color scale kit decals, die-cut balsa fins, plastic nose cone and engine pods, and quick-release engine mount. Length: 10.7" (27.2 cm) Wing Span: 8.125" (20.6 cm) Dia. 1.637" (41.58 mm) Wt. 1.98 oz. (55.7 g) Ship Wt. 12 oz. ENGINES: A8-3 (1st Flt.) B4-4, B6-4, B8-5, C6-5

No. 1385 Only $7.00

NEW! SPACE SHUTTLE COLUMBIA

Flying Model Rocket Starter Outfit

SKILL LEVEL 2

- Space Shuttle Columbia Flying Model Rocket Kit.
- Futuristic Launch Control System with Launch Pad and Hand-Held Launch Controller.
- Flight Pak with 3 high performance model rocket engines plus Solar Igniters, parachute recovery wadding, and the Mini-Alpha Book of Model Rocketry.
- Requires white glue, plastic cement, finishing supplies, and 6 or 12 volt lantern battery for operation—Not included.

Ship. Wt. 1 lb.

No. 1424 Only $17.95

3 FREE Super Powered D12-3 Engines ($4.95 Value) when you purchase any one of these Giant Maxi-Brutes! See Page 17 For Bonus Coupon!

GIANT MAXI-BRUTES!

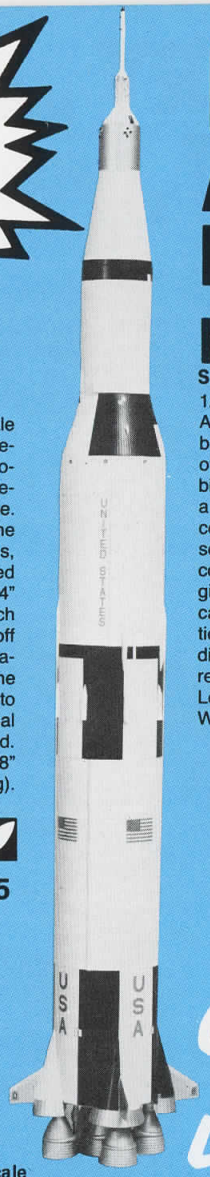
PERSHING-1A

SKILL LEVEL 3

This Maxi-Brute is a true scale model of the U.S. Army's surface-to-surface ballistic missile produced by Martin-Marietta and deployed with NATO units in Europe. Our 1/10 scale model is "D" engine powered with three color decals, pre-shaped fins, detailed molded plastic nose cone, and dual 24" parachute recovery. A 3/16" launch rod should be used for best lift-off results. The unusual fin configuration of this model makes it one of the most unique scale models ever to be offered. Additional historical background data is also included. Length: 41" (104.14 cm) Dia. 3.938" (100 mm) Wt. 11.5 oz. (326.03 g). ENGINE: D12-3

No. 1268 . . $27.95

Over 3 Feet Long!



Over 43" Long!

HONEST JOHN

SKILL LEVEL 3

1/9th scale model of the famous U.S. Army surface-to-surface, supersonic ballistic missile, one of the mainstays of the Army's atomic weapons capability. This highly detailed model uses a single "D" engine for power and comes with pre-shaped, accurately scaled fins and molded plastic nose cone. Spectacular recovery with giant, dual 24" orange and white canopy 'chutes. Great for demonstrations and perfect as an impressive display model. A 3/16" launch rod is recommended for best lift-off results. Length: 37" (94 cm) Dia. 2.6" (66 mm) Wt. 14 oz. (397 g). ENGINE: D12-3

No. 1269 . . . . . $27.95

Over 3 Feet Long!

1/100th Scale

SATURN V

SKILL LEVEL 5

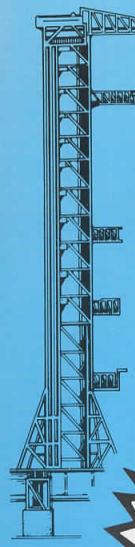
A truly magnificent scale reproduction of the world's most famous rocket... the mighty Saturn V. First space vehicle to carry men to the moon. Precision molded plastic engine nozzles and Apollo capsule with escape tower give detailed authenticity. Corrugated body wrap-ons make this one of our most precise scale models. Length: 43.5" (110 cm) Dia. 3.938" (100 mm) Wt. 9.9 oz. (280 g). ENGINES: Cluster power: C5-3 or C6-3 (3 required). "D" Power: D12-3 (1 required).

No. 1236 . . . . . ONLY $34.95

Avg. Ship Wt. 32 oz.

GANTRY CLOSE OUT SALE!

HURRY! SUPPLIES ARE LIMITED!!



Screamer

Skill Level 1

featuring spectacular streamer recovery. She screams off the pad. "Don't Blink", or you'll miss her. Another super performer

Length: 7.8" (19.81 cm) Dia. 0.541" (13.74 mm)
Wt. 0.255 oz. (7.23 g).
ENGINES: 1/4A3-2T (1st Flt.) 1/4A3-4T 1/2A3-4T A3-6T A10-3T

No. 0802 . . . . . Reg. ~~$3.50~~

SAVE $1.00 SCREAMER NOW ONLY $2.50
See Page 17 For Bonus Coupon!

LITTLE JOHN

Skill Level 1

ance of a semi-scale surface-to-surface military vehicle with U.S. Army decor. Authentic appear-

Length: 14.0" (35.6 cm) Dia. 0.976" (24.8 mm)
Wt. 0.875 oz. (24.7 g).
ENGINES: 1/2A3-2T (1st Flt.) A3-4T A10-3T

No. 0819 . . . Reg. ~~$4.00~~

SAVE $1.20 LITTLE JOHN NOW ONLY $2.80
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PHOTON DISRUPTOR

Skill Level 2

star fleet with this sophisticated scale missile from the 23rd century. Designed as a mass conversion weapon to overload the defensive screens of an enemy vessel, the actual Photon Disruptor may also be used as an interceptor missile, a proximity space mine, or a distress signal. Equip your

Length: 18.25" (46.4 cm) Dia. 0.976" (24.8 mm)
Wt. 1.4 oz. (40 g).
ENGINES: 1/2A6-2 A8-3 (1st Flt.) A8-5 B4-4 B6-4 B8-5 B14-5 C6-5

No. 1282 . . . . . Reg. ~~$5.50~~

SAVE $1.65 PHOTON DISRUPTOR NOW ONLY $3.85
See Page 17 For Bonus Coupon!

KIT FEATURE SYMBOLS

indicate the following kit features:

—Die-Cut Balsa Fins
—Plastic Nose Cone
Kit Decals
Quick-Release Engine Mount
Parachute & Size

Unless otherwise stated, all the model rocketry kits in this catalog are hobby kits requiring assembly. Launch system, engines, glue and finishing supplies are not included. Recommended for ages 10 to adult. Adult supervision suggested for those under 12 years of age when flying model rockets.

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SAVE $2.75 BOMARC NOW ONLY $6.25
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BOMARC

Skill Level 3

Beautifully detailed, 1/24th scale flying model of the famous U.S.A.F. surface-to-air interceptor missile. Great performance too with dramatic 18" parachute recovery. Ship. Wt. 12 oz.
Engines: B4-2 B4-4 B6-2 (First Flight) B6-4 C5-3 C6-3 C6-5

No. 0657
Reg. ~~$9.00~~

SAVE $2.75 SOLAR SAILER NOW ONLY $6.25
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GLEAMS LIKE A JEWEL HIGH UP IN SPACE!

SOLAR SAILER

Skill Level 3

Simulates one of the newest, most sophisticated concepts for the 1980's, and like the Space Shuttle Enterprise, Estes engineers have it flying long before NASA does. Developed for low-cost, long duration, deep space missions using sunlight pressure to push away from Earth at speeds up to 35,000 mph. Our model features printed balsa fins, and giant 24" solar sail 'chute. Ship. Wt. 11 oz.
Engines: B4-2 B4-4 B6-2 B6-4 (First Flight) B8-5 B8-7 B14-5 C6-5

No.1297.....Reg. ~~$9.00~~

SAVE $3.00 INTERCEPTOR NOW ONLY $6.50
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INTERCEPTOR

Skill Level 3

Futuristic version of real interplanetary interceptor. Deep space exotic design makes it the pride of any modeler. Delivers excellent performance for really sensational flights. Plus all die-cut balsa parts and detailed plastic nose cone, wing pods and tail cone. Ship. Wt. 12 oz.
Engines: B4-2 B6-2 B6-4 (First Flight) B8-5 B14-5 C6-5

No.1250.....Reg. ~~$9.50~~

SAVE $1.50
STARBLAZER X-20
NOW ONLY $3.75
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Skill Level 3

STARBLAZER X-20

Envisioned as a mainstay in the space arsenal of the U.N. Earth Forces, the Starblazer X-20 is utilized for daily patrol and emergency intercept missions in Earth's outer atmosphere. This model sports great performance and exciting recoveries.
Length: 19.25" (48.9 cm) Dia. .976" (24.8 mm)
Wt. 1.12 oz. (31.7 g).
ENGINES: A8-3 (1st Flt.) A8-5 B4-2 B4-4 B4-6 B6-2 B6-4 B6-6 B8-5 B8-7 B14-5 B14-7 C6-5 C6-7

No. 1342 . . . . . Reg. ~~$5.25~~

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STAR PROBE
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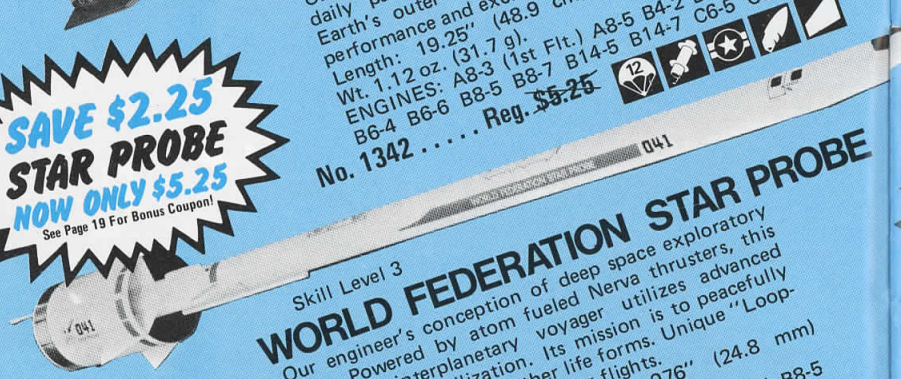

Skill Level 3

WORLD FEDERATION STAR PROBE

Our engineer's conception of deep space exploratory craft. Powered by atom fueled Nerva thrusters, this futuristic interplanetary voyager utilizes advanced "Loop-Fin" stabilization. Its mission is to peacefully seek-out and discover other life forms. Unique "Loop-Fin" design delivers spectacular flights.
Length: 31" (78.7 cm) Dia. .976" (24.8 mm)
Wt. 2.5 oz. (70 g).
ENGINES: A8-3 B4-2 B4-4 B6-2 B6-4 (1st Flt.) B8-5 B14-5 C6-5 C6-7

No. 1341 . . . . . Reg. ~~$7.50~~

SAVE $2.50
SPACE TRANSPORTER
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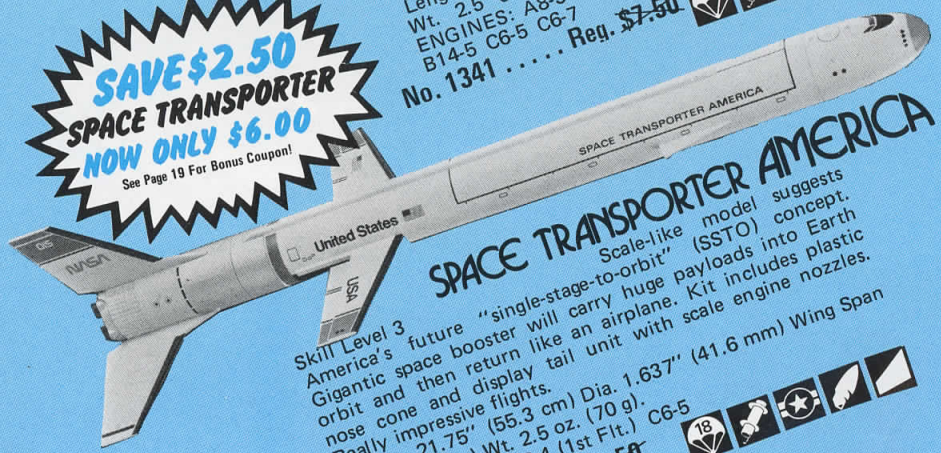

Skill Level 3

SPACE TRANSPORTER AMERICA

America's future "single-stage-to-orbit" (SSTO) concept. Gigantic space booster will carry huge payloads into Earth orbit and then return like an airplane. Kit includes plastic nose cone and display tail unit with scale engine nozzles. Really impressive flights.
Length: 21.75" (55.3 cm) Dia. 1.637" (41.6 mm) Wing Span 7.0" (17.8 cm) Wt. 2.5 oz. (70 g).
ENGINES: B4-2 B6-4 (1st Flt.) C6-5

No. 1338 . . . . . Reg. ~~$8.50~~

SAVE $2.50
EXCALIBUR
NOW ONLY $6.00
See Page 19 For Bonus Coupon!

"The Good Guy"

Skill Level 3

PATROL CRUISER EXCALIBUR

Sleek and powerful, the Excalibur is the pride of the Inter-galactic Patrol. Hidden in the ship's nose, on a retractable carriage is a quad mounted, choke barrel, Hyper-Ballistic Vacuum Gun. Speeds in the Star-Fall category are possible and range is reported to be 63 billion miles without refueling. Our scale model of this heroic spaceship delivers really spectacular flights.
Length: 20.125" (51.1 cm) Dia. 1.637" (41.6 mm)
Wt. 2.3 oz. (66 g).
ENGINES: A8-3 B4-4 (1st Flt.) B6-4 C5-3 C6-3

No. 1339 . . . Reg. ~~$8.50~~

GALACTIC PIRATES™

SAVE $2.50
DRAGONSHIP 7
NOW ONLY $6.00
See Page 19 For Bonus Coupon!

"The Bad Guy"

Skill Level 3

DRAGON SHIP 7

Dreaded Dragonship of the Outlaw Galactic Pirate Confederacy. Dragonship 7, based on the asteroid Grebsing is an outstanding example of evil technical genius. The ship's Twin Hydron-Stethode Cannon furnish a firepower of the Seventh Magnitude. This alien marauder from deep space is aptly named and universally feared. The Estes version of this villainous craft makes a terrific display model.
Length: 16.75" (42.5 cm) Dia. 1.637" (41.6 mm)
Wt. 2.7 oz. (77 g).
ENGINES: A8-3 B4-4 (1st Flt.) B6-4 B8-5 B14-5 C6-5

No. 1345 . . . Reg. ~~$8.50~~

SAVE $1.50
F-61 STARFIGHTER
NOW ONLY $3.50
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F-61 STAR FIGHTER

Futuristic Skill Level 2 cockpit canopy and simulated air-to-air missiles, laser cannons, and infra-red photon torpedoes. design with plastic starfighter Great flights up to 900 feet.
Length: 18.75" (47.6 cm) Dia. .976" (24.8 mm)
Wt. 1.1 oz. (31.8 g).
ENGINES: A8-3 B4-2 B4-4 (1st Flt.) B6-2 B6-4 B8-5 C5-3 C6-3 C6-5

No. 1358 . . . Reg. ~~$5.00~~

SAVE $2.00
SCUD-B
NOW ONLY $4.50
See Page 19 For Bonus Coupon!

Skill Level 2

RUSSIAN SS-1C SCUD-B

Impressive 1/20.4 scale model of the Russian medium range surface-to-surface missile. Scud-B is the NATO code name designated for this missile which is deployed by all the armies of the Warsaw Pact countries. This realistic kit is easy-to-assemble. Build it sport-scale or true-scale. A superb flyer and perfect military model for the beginner or advanced rocketeer. Length: 21.7" (55.1 cm) Dia. 1.637" (41.6 mm) Wt. 2.5 oz. (70.9 g).
ENGINES: B4-2 B4-4 B6-4 (1st Flt.) B8-5 B14-5 C6-5 C6-7

No. 1340 ..... Reg. ~~$6.50~~

SAVE $8.00
GERMAN V-2
NOW ONLY $19.95
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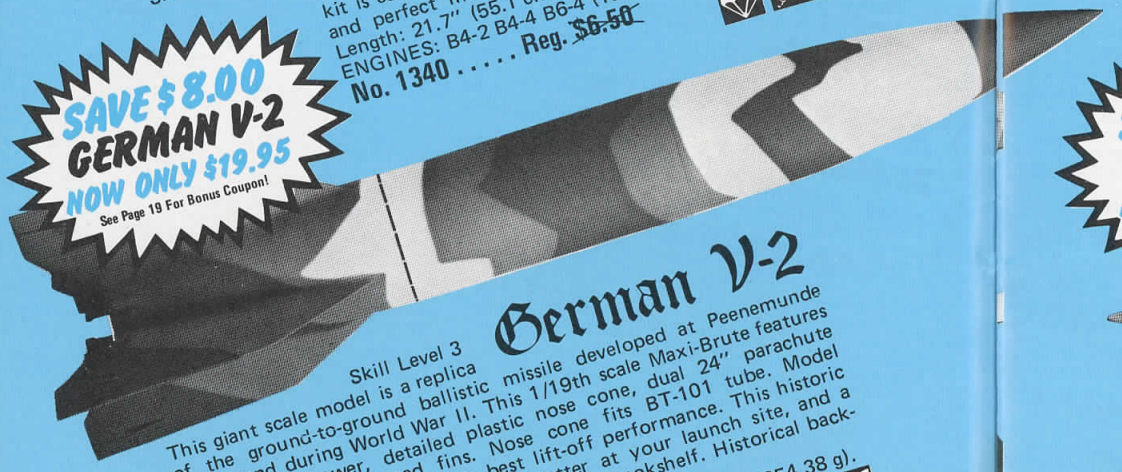

German V-2

Skill Level 3

This giant scale model is a replica of the ground-to-ground ballistic missile developed at Peenemunde before and during World War II. This 1/19th scale Maxi-Brute features "D" engine power, detailed plastic nose cone, dual 24" parachute recovery and pre-shaped fins. Nose cone fits BT-101 tube. Model requires 3/16" launch rod for best lift-off performance. This historic reproduction will be the attention-getter at your launch site, and a handsome display model for your desk or bookshelf. Historical background is also included with instructions.
Length: 33.5" (85 cm) Dia. 3.938" (100 mm) Wt. 12.5 oz. (354.38 g).
ENGINE: D12-3

No. 1267 ..... Reg. ~~$27.95~~

SAVE $2.25
MERCURY REDSTONE
NOW ONLY $5.75
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MERCURY REDSTONE

Skill Level 5

boosted Commander Alan Shepard on America's first manned space flight. Beautifully scaled to 1/42nd actual size our Mercury Redstone features intricately detailed fin assemblies and escape tower. Launchings simulate real space missions as Mercury capsule returns via bright orange and white 12" canopy 'chute and rocket descends on larger 18" parachute.
Length: 23.5" (59.7 cm) Dia. 1.637" (41.6 mm) Wt. 2.1 oz. (60 g).
ENGINES: A8-3 B4-4 B6-4 (1st Flt.) B8-5 B14-5 C6-5

No. 1241 ..... Reg. ~~$8.00~~

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MULTI-ROC
NOW ONLY $6.95
See Page 21 For Bonus Coupon!

MULTI ROC

Skill Level 3

Really exciting multi-purpose sport flyer featuring large payload section, high performance parasite glider, and two-stage booster power. Can be flown in eight different flight configurations. Payload section is perfect for small telemetry or insect cargoes. Parasite glider releases from upper stage rocket at apogee and is capable of glide times of more than 30 seconds. Booster section features pop-and-go staging plus tumble recovery.
Length: 24.5" (62.2 cm) Dia .98" (24.9 mm) Wt. 1.94 oz. (55 g) with glider.
ENGINES: SINGLE STAGE A8-3 B4-4 B6-4 B8-5 B14-5 B14-7 C6-5 UPPER STAGE A8-5 (1st Flt.) B4-6 B6-6 B8-7 C6-7 BOOSTER STAGE A8-0 (1st Flt.) B6-0 B8-0 C6-0

No. 1329 ..... Reg. ~~$9.95~~

SAVE $1.75
APOGEE II
NOW ONLY $4.00
See Page 21 For Bonus Coupon!

apogee II

Skill Level 3

Ultimate in 2-stage performance and reliability. See-through payload section lets you observe specimens without removing them from the rocket. Features 12" parachute and tumbling re-entry booster. Includes Tech Report on Multi-Staging. Pat. No. 3,292,302. (Decals not included.)
Length: 14.7" (37.4 cm) Dia. 0.736" (18.7 mm) Wt. 0.6 oz. (17 g).
ENGINES: UPPER STAGE 1/2A6-4 (1st Flt.) A8-5 B4-6 B6-6 B8-7 B14-7 C6-7 BOOSTER 1/2A6-0 (1st Flt.) A8-0 B6-0 B8-0 B14-0 C6-0

No. 1205 ... Reg. ~~$5.75~~

SAVE $2.00
AVENGER
NOW ONLY $4.75
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AVENGER

Skill Level 2

sounding rocket look. Large 18", slender lines give this bird the gently, booster employs tumble recovery. 'chute brings payload section back
Length: 32" (81.3 cm) Dia. 1.325" (33.7 mm) Wt. 2.7 oz. (77 g).
ENGINES: UPPER STAGE A8-5 B4-6 B6-6 (1st Flt.) B8-7 B14-7 C6-7 BOOSTER STAGE A8-0 B6-0 (1st Flt.) B8-0 B14-0 C6-0

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HURRY! ORDER TODAY !! SUPPLIES ARE LIMITED!!!

SAVE $3.00
ANDROMEDA
NOW ONLY $6.95
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Andromeda

Skill Level 3

Designed for journeys to distant planets this incredible "starship of the future" will be an outstanding addition to your model rocket collection. Performing interplanetary missions within the galaxy, our engineer's conception of the actual ship features simulated hybrid fission-ion propulsion engines, forward crew module and colorful mission decor. This beauty is over 43" long and represents a unique entry to our own Starship Fleet. Andromeda's flights are most spectacular. Length: 43.3" (110 cm) Dia. 0.736" (18.7 mm) Wt. 3.0 oz. (85 g).
Engines: B4-2 B4-4 B6-2 B6-4 (First Flight) B8-5 B14-5 C6-5

No. 1273 . . . Reg. ~~$9.95~~

SAVE $2.25
MARS SNOOPER II
NOW ONLY $5.00
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MARS SNOOPER II

Skill Level 4

Looks like a real spaceship. Futuristic decor, advanced styling, and simulated touchdown pads gives it a real science-fiction appearance. Ship. Wt. 8 oz.
Engines: A8-3 (First Flight) B4-2 B4-4 B6-2 B6-4 B8-5 B14-5 C6-5

No. 1220.....Reg. ~~$7.25~~

SAVE $1.75
ALIEN INVADER
NOW ONLY $4.00
See Page 21 For Bonus Coupon!

Alien INVADER

Skill Level 3

By computer enhancement of declassified portion of sensor readings, Estes engineers have produced a replica of the Alien Invader spacecraft. Data indicates spacecraft capable of limited atmospheric operations. Your model includes a plastic forward command hull, engine-engineering section and outboard atmospheric propulsion units. Ship. Wt. 8 oz.
Engines: 1/2A6-2 A8-3 (First Flight) B4-4 B6-4 B8-5 B8-7 B14-5 B14-7 C6-5 C6-7

No. 1281.....Reg. ~~$5.75~~

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SAVE $1.50
NOMAD
NOW ONLY $4.50
See Page 21 For Bonus Coupon!

NOMAD

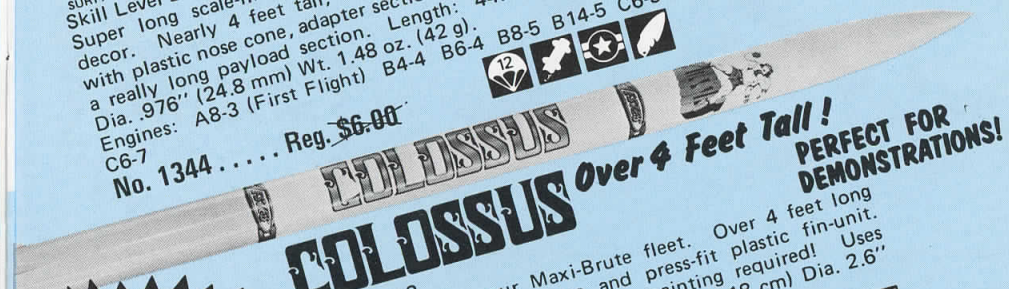
SURFACE TO SURFACE MISSILE

Nearly 4 Feet Long!

Skill Level 2

Super long scale-like surface-to-surface missile with ICBM decor. Nearly 4 feet tall, this big bird is easy-to-assemble with plastic nose cone, adapter section and fin-unit. Features a really long payload section. Length: 44.25" (112.4 cm) Dia. .976" (24.8 mm) Wt. 1.48 oz. (42 g).
Engines: A8-3 (First Flight) B4-4 B6-4 B8-5 B14-5 C6-5 C6-7

No. 1344 . . . . . Reg. ~~$6.00~~



SAVE $9.00
COLOSSUS
NOW ONLY $11.00
See Page 21 For Bonus Coupon!

COLOSSUS

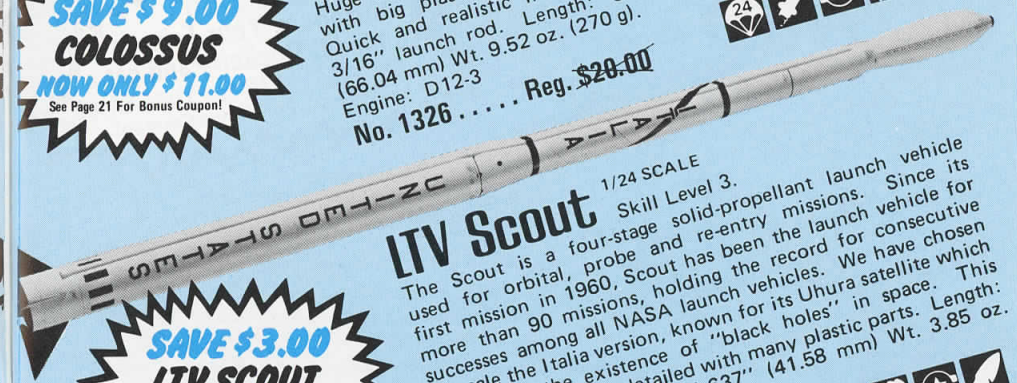
Over 4 Feet Tall!

PERFECT FOR DEMONSTRATIONS!

Skill Level 2

Huge addition to our Maxi-Brute fleet. Over 4 feet long with big plastic nose cone and press-fit plastic fin-unit. Quick and realistic lift-off. No painting required! Uses 3/16" launch rod. Length: 51.25" (130.18 cm) Dia. 2.6" (66.04 mm) Wt. 9.52 oz. (270 g).
Engine: D12-3

No. 1326 . . . . . Reg. ~~$20.00~~



SAVE $3.00
LTV SCOUT
NOW ONLY $6.95
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LTV Scout

1/24 SCALE

Skill Level 3.

The Scout is a four-stage solid-propellant launch vehicle used for orbital, probe and re-entry missions. Since its first mission in 1960, Scout has been the launch vehicle for more than 90 missions, holding the record for consecutive successes among all NASA launch vehicles. We have chosen to scale the Italia version, known for its Uhura satellite which discovered the existence of "black holes" in space. This model is extremely detailed with many plastic parts. Length: 36.09" (91.67 cm) Dia. 1.637" (41.58 mm) Wt. 3.85 oz. (109 g).
Engine: C6-5

No. 1287 . . . . . Reg. ~~$9.95~~

SAVE $1.75
mini-BOMARC
NOW ONLY $3.75
See Page 21 For Bonus Coupon!

mini BOMARC

Skill Level 3

Scale model of famous surface-to-air interceptor missile. Authentic Canadian Air Force decor. Ship. Wt. 5 oz.
Engines: 1/2A3-2T (First Flight) A3-4T A10-3T

No. 0805
Reg. ~~$5.50~~

SAVE $3.00
MARS LANDER
NOW ONLY $10.00
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MARS LANDER

Skill Level 5

Displays futuristic concept for a planetary exploration and landing vehicle. Spring-loaded landing gear simulates realistic upright touch-down. Big 18" bright orange and white canopy 'chute makes for a really great recovery sequence. Includes highly detailed body panels and colorful scale-like decals. Height: 12" (30.5 cm) Dia. 3.8" (96.5 mm) Landing Gear Span 13.2" (33.5 cm) Wt. 3.0 oz. (85 g). Engines: B4-2 (First Flight) B6-2 C5-3 C6-3

No. 1243..... Reg. ~~$13.00~~

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HIGH PERFORMANCE

WIZARD

Skill Level 1

- *Kit Decals
- *Easy-To-Assemble
- *Huge 30" Streamer Recovery
- *Flights Up To 1600 Feet
- *Die-Cut Balsa Fins
- *12" Long (30.5 cm)

SAVE $1.50
Introduce Your Friends To Model Rocketry and get a WIZARD KIT for Only $1.00
See Page 21 For Bonus Coupon!

Recommended Engines:
1/2A6-4 A8-3 A8-5 (First Flight)
B4-4 B4-6 B6-4 B6-6 B8-5 B8-7 C6-7

Ship Wt. 5 oz. Cat. No. 1292 ..... **Reg. ~~$2.50~~**

Just fill-in the names of four of your friends on the form below who would like to receive a copy of our new, full-color, 64 page, Estes Catalog and we'll send you a Wizard rocket kit for ... Only $1.00

Be sure to include this Special Form and Bonus Coupon with your next order!

Dept. 49K

Name _____
Address _____
City _____
State _____ Zip _____

Dept. 49K

Name _____
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Dept. 49K

Name _____
Address _____
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Dept. 49K

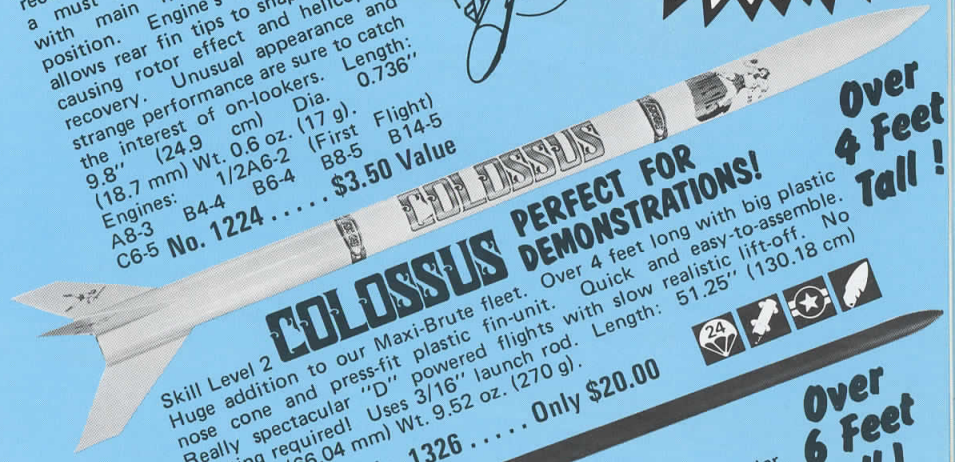
Name _____
Address _____
City _____
State _____ Zip _____

"BIG BIRD SPECIAL"

"FREE" GYROC (worth $3.50) when you purchase any one of these 'D' powered birds.
See Page 23 For Bonus Coupon!

Skill Level 3

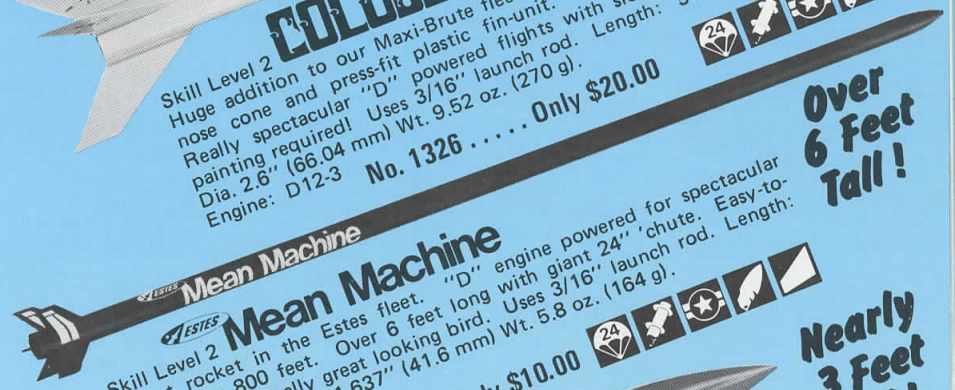
An amazing and unique "helicopter" recovery system makes the Gyroc a must for your fleet. Lifts-off with main fins in straight-away position. Engine's ejection charge allows rear fin tips to snap sideways causing rotor effect and helicopter recovery. Unusual appearance and strange performance are sure to catch the interest of on-lookers. Length: 9.8" (24.9 cm) Dia. 0.736" (18.7 mm) Wt. 0.6 oz. (17 g).
Engines: 1/2A6-2 (First Flight) A8-3 B4-4 B6-4 B8-5 B14-5 C6-5
No. 1224 ..... $3.50 Value



Over 4 Feet Tall !

Skill Level 2 **COLOSSUS PERFECT FOR DEMONSTRATIONS!**

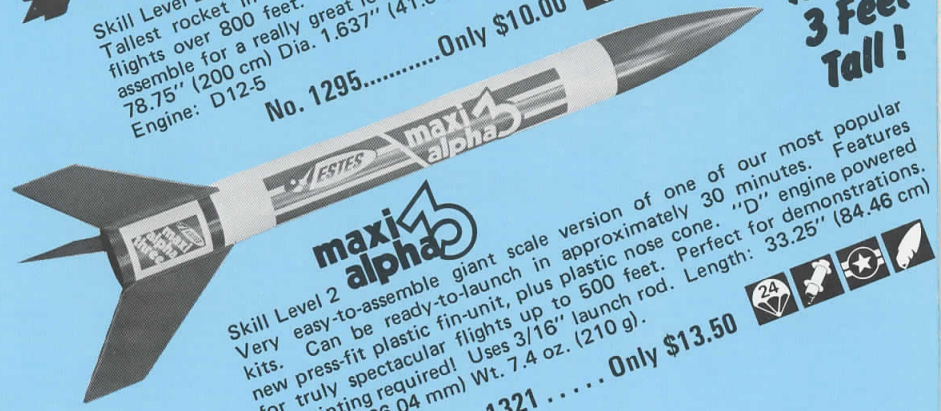
Huge addition to our Maxi-Brute fleet. Over 4 feet long with big plastic nose cone and press-fit plastic fin-unit. Quick and easy-to-assemble. Really spectacular "D" powered flights with slow realistic lift-off. No painting required! Uses 3/16" launch rod. Length: 51.25" (130.18 cm) Dia. 2.6" (66.04 mm) Wt. 9.52 oz. (270 g).
Engine: D12-3 **No. 1326 ..... Only $20.00**



Over 6 Feet Tall !

Skill Level 2 **Mean Machine**

Tallest rocket in the Estes fleet. "D" engine powered for spectacular flights over 800 feet. Over 6 feet long with giant 24" 'chute. Easy-to-assemble for a really great looking bird. Uses 3/16" launch rod. Length: 78.75" (200 cm) Dia. 1.637" (41.6 mm) Wt. 5.8 oz. (164 g).
Engine: D12-5
No. 1295.....Only $10.00



Nearly 3 Feet Tall !

maxi alpha

Skill Level 2

Very easy-to-assemble giant scale version of one of our most popular kits. Can be ready-to-launch in approximately 30 minutes. Features new press-fit plastic fin-unit, plus plastic nose cone. "D" engine powered for truly spectacular flights up to 500 feet. Perfect for demonstrations. No painting required! Uses 3/16" launch rod. Length: 33.25" (84.46 cm) Dia. 2.6" (66.04 mm) Wt. 7.4 oz. (210 g).
Engine: D12-3 **No. 1321 ..... Only $13.50**

FREE B6-4 MODEL ROCKET ENGINES (Pkg. of 3 Worth $2.65) when you get any one of these far-out Interplanetary Voyagers
See Page 23 For Bonus Coupon!

INTERPLANETARY VOYAGERS

INCREDIBLE STARSHIPS OF THE FUTURE!!!

StarshipNOVA SKILL LEVEL 3

Truly awesome in appearance, this inter-galactic explorer is believed to be outfitted with both conventional atomic engines and hyper-space starflight drive. Heavily armed with multiple phaser banks, photon torpedos, and energy deflection shields, the Nova is prepared to meet any foe. The Estes version of the magnificent starship is perfect for demonstrations and really great for display. Length: 19.75" (50.2 cm) Dia. .976" (24.8 mm) Wt. 2.3 oz. (65 g). Engines: B4-2 (First Flight) B6-2 C5-3 C6-3

No. 1371..... $6.50

S.S. CASSIOPEIA SKILL LEVEL 3

Envisioned as an interplanetary passenger starship by Estes engineers. This impressive model is a challenge to build and beautiful to display. Dramatic flights up to 900 feet. Length: 32" (81.3 cm) Dia. .976" (24.8 mm) Wt. 2.2 oz. (62.5 g). Engines: B4-2 B4-4 B6-2 B6-4 (First Flight) B8-5 C6-5 C6-7

No. 1369..... $6.50

Orbital Transport SKILL LEVEL 4

Only a gleam in the eye of NASA, but it's flying for Estes rocketeers right now! Astonishingly realistic recovery system where mother-ship returns to Earth via huge 18" parachute and interplanetary orbiter glides home. Long and sleek, developed for both orbital and near-space missions. Transport vehicle and glider fly piggy-backed and separate at apogee for spectacular dual recovery. Transport Ship Length: 23" (58.4 cm) Dia. 0.976" (24.8 mm) Wing Span 7.9" (20 cm) Wt. 2 oz. (56 g). Re-entry Vehicle Length: 8.6" (21.8 cm) Dia. 0.736" (18.7 mm) Wing Span 5" (12.7 cm) Wt. 0.5 oz. (14 g).

ENGINES: B4-2 B4-4 B6-2 B6-4 (1st Flt.) B8-5 B14-5 C6-5

No. 1242 . . Only $8.00

FREE B6-4 MODEL ROCKET ENGINES (Pkg. of 3 Worth $2.65) when you get any one of these far-out Interplanetary Voyagers
See Page 23 For Bonus Coupon!

INTERPLANETARY VOYAGERS

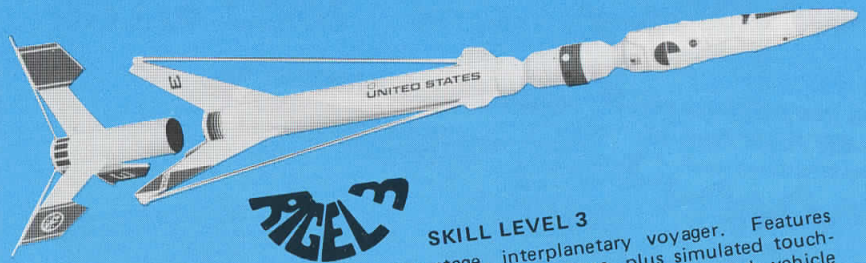
INCREDIBLE STARSHIPS OF THE FUTURE!!!

Vindicator SKILL LEVEL 3

Sleek interplanetary interceptor with futuristically detailed nose cone. A really sharp display model with starfight camouflage decor. Great demonstration model with flights up to 900 feet. Length: 25.5" (64.8 cm) Dia. 1.325" (33.7 mm) Wt. 2.6 oz (72.4 g).

Engines: B4-2 B6-2 B6-4 (First Flight) B8-5 C6-3 C6-5

No. 1367..... $6.50



RIGEL 3 SKILL LEVEL 3

Very exotic, two-stage, interplanetary voyager. Features highly detailed futuristic nose cone, plus simulated touch-down struts. Envisioned as a deep space research vehicle of the 21st Century. Length: 26.6" (67.6 cm) Dia. 1.325" (33.7 mm) Wt. 2.7 oz. (77 g).

Engines: Single Stage A8-3 B4-4 B6-4 (First Flight) B8-5 C6-5 Upper Stage A8-5 (First Flight) B4-6 B6-6 B8-7 C6-7 Booster Stage A8-0 (First Flight) B6-0 B8-0 C6-0

No. 1363..... $8.00

alien explorer Nearly 4 Feet Long SKILL LEVEL 3

Incredible alien starship believed to be from a distant galaxy. Is it friend or foe? Its size and unique appearance make it a most dramatic demonstration and display model. Really spectacular lift-off and recovery. Length: 45" (114.3 cm) Dia. .976" (24.8 mm) Wt. 2.43 oz. (68.8 g).

Engines: B6-2 B6-4 (First Flight) B8-5 C6-5

No. 1372..... $8.00

ATTENTION ROCKETEERS!

VISA · master charge THE INTERBANK CARD

Tell your parents that your Estes Christmas, Holiday Season, and Birthday gifts can now be charged on their VISA or Master Charge Cards. Minimum credit card order is $10.00. See the enclosed order form for more information!

20% OFF
Mighty "D" Engine Special
SAVE $2.97
See Page 23 For Bonus Coupon

BIG $14.85 VALUE

Receive Three Each D12-3, D12-5, and D12-7 High Performance Estes Engines Plus Solar Igniters. A Total of 9 Popular "D" Engines. Ship. Wt. 1 lb. 3 oz.

No. 1770 .... **ONLY $11.88**

"FREE" 12" Parachute (WORTH $1.20) when you purchase the Blast-Off Flight Pack #1672
See Page 23 For Bonus Coupon

BLAST-OFF FLIGHT PAK

$23.40 VALUE **SAVE $7.41**

Ideal Engine Assortment For The Active Rocketeer. Features 24 of The Most Popular Estes Model Rocket Engines, plus Solar Igniters and Parachute Recovery Wadding. Priced At An Excellent Savings.

Includes:
Six 1/2A6-2 High Performance Model Rocket Engines
Six A8-3 High Performance Model Rocket Engines
Six B6-4 High Performance Model Rocket Engines
Six C6-5 High Performance Model Rocket Engines
30 Solar Igniters
One Pkg. Parachute Recovery Wadding

No. 1672
ONLY $15.99

Be Sure To Enclose Special Offer Coupons

Place Stamp Here

ESTES INDUSTRIES
"Model Rocket Capitol of the World"
PENROSE, CO. 81240 USA

HOW TO ORDER — FOLLOW THESE EASY STEPS FOR BEST SERVICE

This order form replaces all previous order forms. Please be sure that you use the correct and full catalog number for each item when you order. All prices are subject to change without notice. WHEN SENDING ORDER BE SURE TO GIVE ZIP CODE IN YOUR ADDRESS.

POSTAGE

Estes Industries ships all retail orders POST-PAID in the U.S. by regular land mail or UPS.

PAYMENT ON ORDER

Full payment must accompany all orders. Please send all remittances by either check or money order, both for your protection and our convenience. If you do send currency, be sure your envelope has sufficient postage, is properly sealed, and is addressed correctly to assure delivery. Coins should be attached to a separate sheet of paper, not to the order blank. Use a single strip of masking tape to hold the coins in place. Avoid the mailing of coins, as they are easily lost in the mail. We cannot assume responsibility for the loss of coins, currency, or orders in the mail. Remember to include sufficient funds with your order. For your protection, we do not ship orders C.O.D. Proper attention to these details will result in speedier service for you.

IMPORTANT

Estes model rocketry products are recommended for ages 10 to adult. Adult supervision is suggested for those under 12 years of age when flying model rockets.

Your order may, for various reasons, have to be shipped in more than one package. If all of your order does not come at the same time, please be patient and give the balance of the order time to arrive.

NOTE: All foreign orders require additional postage. Please write for more information on postage and mailing restrictions.

PRIORITY MAIL (Air Mail) SERVICE

While Estes Industries specializes in fast service, sometimes extra speed is necessary. The Post Office offers a service called Priority Mail which gives packages and parcels the fastest handling and transportation possible. PRIORITY MAIL CANNOT INCLUDE MODEL ROCKET ENGINES, AS ORDERS CONTAINING ENGINES CAN ONLY BE SHIPPED BY PARCEL POST OR UPS AT THIS TIME.

For other items on which you desire extra rapid delivery, additional postage may be included for Priority Mail. Shipping weights are given on all items. Total up the shipping weights on the items you are ordering, then find the amount to allow for extra postage on the chart below. When your order is processed you will be charged only for the difference between regular parcel post and priority mail - any excess will be refunded.

WEIGHT (UP TO BUT NOT OVER)		10 oz. to 1 lb.	2 lbs.	3 lbs.	4 lbs.
Allow →		$ .80	$1.13	$1.51	$1.93
5 lbs.	6 lbs.	7 lbs.	8 lbs.	9 lbs.	10 lbs.
$2.48	$3.13	$3.73	$4.33	$4.93	$5.53

For orders 9 ounces or less, send 9¢ per ounce.

"Estes is an equal opportunity employer."

903,028C

FULL ONE YEAR WARRANTY

ESTES — A DAMON COMPANY

Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired or replaced, at Estes' option and at no charge to you, provided it is returned to Estes with proof of purchase.

This warranty does not cover incidental or consequential damage including injury or damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to: Estes Industries, Customer Service Department, Penrose, Colorado 81240.

TEAR HERE AND INSERT IN ENVELOPE

Thank you for ordering

TEAR HERE AND INSERT IN ENVELOPE

FOLD HERE AND SEAL

HAVE YOU ORDERED EVERYTHING YOU NEED? IS YOUR MONEY ORDER OR CHECK ENCLOSED? DID YOU CHECK YOUR MAILING ADDRESS AND ZIP? DID YOU FILL IN ALL CREDIT CARD INFORMATION?

–HELP US TO SERVE YOU BETTER–

Your comments will assist us in providing you with better service and even more exciting products.

1. What types of scale models would you like to see Estes produce? _____
2. Do you prefer ☐Large or ☐Small size models?
3. Do you think Estes kits are generally ☐Easy, ☐Average or ☐Difficult to assemble considering their recommended skill level?
4. Are Estes kit instructions easy to follow? ☐Yes ☐No
5. Would you prefer more plastic parts for simpler assembly and better detail? ☐Yes ☐No
6. What Skill Level of kits do you prefer to build?
   ☐1 ☐2 ☐3 ☐4 ☐5
7. My three favorite types of model rockets are
   ☐Single Stage ☐Scale Model ☐Boost Glider
   ☐Sport Flier ☐Futuristic Design ☐Maxi-Brute
   ☐Mini-Brute ☐Multi-Stager
   ☐"D" Powered ☐Payload
8. I became interested in model rocketry because of:
   ☐a friend ☐film ☐gift
   ☐school ☐magazine ad ☐hobby shop
   ☐rocket club ☐saw a launch ☐department store
   ☐article ☐comic book
   ☐TV
   ☐other _____
9. My favorite type of scale model is:
   ☐Military Scale ☐NASA Scale ☐Sounding Scale
10. What product other than model rockets would you like to see Estes produce:
    ☐Electric RC Cars/ ☐Kits ☐Pre-Assembled
    ☐Powered Boats/ ☐Kits ☐Pre-Assembled
    ☐RC Airplanes/ ☐Kits ☐Pre-Assembled
    ☐U-Control Airplanes/ ☐Kits ☐Pre-Assembled
    ☐Solar Kits ☐Construction Sets
    ☐Slot Racing ☐HO Scale ☐1/32nd. Scale
    ☐Other _____
11. Age ____ Grade ____
12. ☐Male ☐Female

— THANK YOU FOR YOUR ASSISTANCE —

Send a Friend a Catalog!

☐ Please rush a "New" ESTES Model Rocketry Catalog to:
Friend's Name _____
STREET _____
CITY _____
STATE _____ ZIP _____ Dept. 50N

☐ Please rush a "New" ESTES Model Rocketry Catalog to:
Friend's Name _____
STREET _____
CITY _____
STATE _____ ZIP _____ Dept. 50N

Ideal E
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Waddin
Savings
Page 16

ESTES ORDER FORM

	Cat. No.	Qty.	Product Description	Unit Price		Total	
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12	# 1447	☐	EAC Membership Kit				

☐ I am an "Active" EAC Rocketeer.

Merchandise Total

HANDLING CHARGES	
Order Amount	Handling Charge
$0 to $15.00	$1.50
$15.01 to $30.00	$2.00
$30.01 and UP.	$2.50

Priority Postage (If Desired) / State Sales Tax 3% (Colo. Residents Only)

→ Add Handling Charge

Amount This Order

Add Balance Due Estes Ind. From Previous Order

Subtract Previous Order Credit (Credit Slip(s) Enclosed)

TOTAL PAYMENT ENCLOSED

PLEASE PRINT PLAINLY IN INK
(If additional space is needed use a separate sheet of paper.)

ORDER DATE EFFECTIVE 9-1-'81

Please Print Name And Address Below Unless It Appears On Label. Correct Address On Label If Necessary.

400N
387
386
385
384
383
382
381
380

Your Name_____

Address_____

City_____

State_____ Zip Code_____

Phone ( ) _____ Birth Date__/__/__
mo. day yr

For Estes Use Only

1 EAC

2 3

MOVED RECENTLY? If you have moved since your last order please give us your old address.

NAME_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

New CHARGE YOUR ORDER! VISA master charge

You may now charge your Estes order on your VISA or Master Charge Card providing your order is $10.00 or more. Simply fill in the information below.

VISA Card No. ☐☐☐☐-☐☐☐☐-☐☐☐☐-☐☐☐☐

Master Charge Card No. ☐☐☐☐-☐☐☐☐☐☐-☐☐☐☐

Expiration Date_____

Card Holder's Signature_____
(As it appears on card.)

ESTES INDUSTRIES, PENROSE, COLO. 81240 *($10.00 Minimum Order For Credit Card Orders.)*

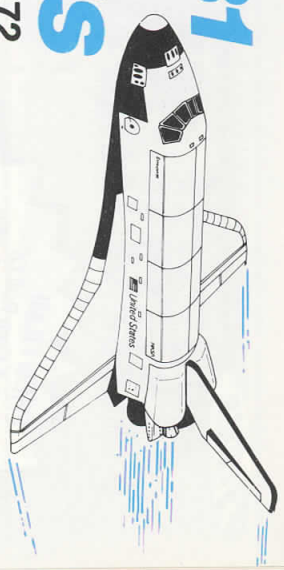
FALL 1981 BONUS COUPONS

Save Up To $103.72 In Discounts And Special Offers From This Estes Catalog!

How To Use These Bonus Coupons

When you decide on a purchase from this catalog, look to see if you can use one of the Bonus Coupons. For example if you purchase the LTV Scout on page 11 you can use the Bonus Coupon which allows you $3.00 toward the purchase of this regularly $9.95 kit. You would cut out the Bonus Coupon . . . send it in with your order and your check or money order for $6.95 plus handling charge of $1.50 . . . and you will receive the LTV Scout for $3.00 off the regular price. Be sure to enclose all Bonus Coupons used with the order form in your return envelope. Only one Bonus Coupon allowed per each kit purchased. Super Bonus Coupon may be used with other Bonus Coupons providing order is $17.50 or more.

You CANNOT use these Bonus Coupons at your retail dealer. All offers expire 4-1-'82. Substitutions will be made when necessary. Prices are subject to change without notice. Multiple coupons CANNOT be used for the purchase of a single kit. If order is $17.50 or more Super Bonus Coupon may be used with other Bonus Coupons.



ESTES # 7569
SUPER BONUS COUPON
Worth $1.75
Toward the purchase of $17.50 or more from this catalog.
Expires 4-1-82

ESTES # 7570
Bonus Coupon
FREE D12-3 Model Rocket Engines # 1666 (Pkg. of 3) Worth $4.95 when you purchase any MAXI-BRUTE on page 3
(See Page 3)
Expires 4-1-82

ESTES # 7571
Bonus Coupon
Worth $1.00
Toward the purchase of a SCREAMER (# 0802)
(See Page 4)
Expires 4-1-'82

ESTES # 7572
Bonus Coupon
Worth $1.20
Toward the purchase of a LITTLE JOHN (# 0819)
(See Page 4)
Expires 4-1-'82

ESTES # 7573
Bonus Coupon
Worth $1.65
Toward the purchase of a PHOTON DISRUPTOR (# 1282)
(See Page 4)
Expires 4-1-'82

ESTES ASTROCAM 110™

Aerial Camera With DELTA II Rocket

FREE FILM!
Receive A Free Roll Of 110 Color Print Film (ASA 400) (Worth $2.50) When You Purchase An AstroCam 110 With Delta II Rocket!
See Page 23 For Bonus Coupon

Actual "AstroCam 110" photo of Three Mile Island Facility, Middletown, PA. Taken by Scott Pearce, Westchester, PA.

Skill Level 2

Experience the thrill and excitement of taking incredible color aerial photographs from hundreds of feet in the sky. As your rocket reaches apogee and begins its descent to Earth, the ejection charge of your rocket engine trips the AstroCam 110's 1/500th sec. shutter and "snap" . . . you have just taken a dramatic aerial photograph from far above. The "new" AstroCam 110 uses high speed 110 color print film ASA 400 or equivalent (not included). film and developing are available locally.

Special features include easy, quick-assembly, high quality acrylic lens, molded plastic housing, glass first surface mirror, and high performance aerodynamic design for minimum drag and maximum altitude. Simple to operate and shoots one, crisp, full color 110 photo per flight. Launch with B8-5, B8-7, B14-5, B14-7, C6-5, or C6-7 engine.

Delta II launch vehicle features specially designed, pre-colored plastic fin-unit for consistently smooth and stable flights. Plus white body tube, quick-release engine mount and great looking, two-color kit decals with dual roll patterns. No painting required! Returns to Earth via 12" dia. parachute. *(Launch System, engines, glue, and film are not included.)*

FILM AND DEVELOPING AVAILABLE LOCALLY!

Take Incredible "Color" Aerial Photos From Hundreds of Feet In The Sky!

Specifications - Camera with Launch Vehicle
Lenght 19.1" (48.5 cm)
Diameter 1.34" (35.3 mm)
Weight 3.75 oz. (106.3 g)
Ship. Wt. 14 oz.

Cat. No. 1327 . . . . .

Only $20.00

Recommended Engines
B8-5 B8-7 B14-5 B14-7
C6-5 C6-7)first Flight)

Camera Specifications:
Lenght 6.5" (16.5 cm)
Diameter 1.39" (35.3 mm)
Weight *(Without Film)* 1.36 oz. (38.5 g)
Weight *(With Film)* 1.76 oz. (50 g)

#7574
ESTES Bonus Coupon
Worth $2.75
Toward the purchase of a BOMARC (#0657)
(See Page 5) Expires 4-1-'82

#7575
ESTES Bonus Coupon
Worth $2.75
Toward the purchase of a SOLAR SAILER (#1297)
(See Page 5) Expires 4-1-'82

#7576
ESTES Bonus Coupon
Worth $3.00
Toward the purchase of a INTERCEPTOR (#1250)
(See Page 5) Expires 4-1-'82

#7577
ESTES Bonus Coupon
Worth $1.50
Toward the purchase of a STARBLAZER X-20 (#1342)
(See Page 6) Expires 4-1-'82

#7578
ESTES Bonus Coupon
Worth $2.25
Toward the purchase of a WORLD FEDERATION STAR PROBE (#1341)
(See Page 6) Expires 4-1-'82

#7579
ESTES Bonus Coupon
Worth $2.50
Toward the purchase of a SPACE TRANSPORTER AMERICA (#1338)
(See Page 6) Expires 4-1-'82

#7580
ESTES Bonus Coupon
Worth $2.50
Toward the purchase of a PATROL CRUISER EXCALIBUR (#1339)
(See Page 7) Expires 4-1-'82

#7581
ESTES Bonus Coupon
Worth $2.50
Toward the purchase of a DRAGONSHIP 7 (#1345)
(See Page 7) Expires 4-1-'82

#7582
ESTES Bonus Coupon
Worth $1.50
Toward the purchase of a F-61 STARFIGHTER (#1358)
(See Page 7) Expires 4-1-'82

#7583
ESTES Bonus Coupon
Worth $2.00
Toward the purchase of a RUSSIAN SS-1C SCUD B (#1340)
(See Page 8) Expires 4-1-'82

#7584
ESTES Bonus Coupon
Worth $8.00
Toward the purchase of a GERMAN V-2 (#1267)
(See Page 8) Expires 4-1-'82

#7585
ESTES Bonus Coupon
Worth $2.25
Toward the purchase of a MERCURY REDSTONE (#1241)
(See Page 8) Expires 4-1-'82

Designer's Special

Ideal parts assortment for the creative rocketeer. Develop your own R & D Program. Over 75 pieces at an excellent savings!

Body Tubes
2 BT-5
2 BT-20
2 BT-50
1 BT-55
1 BT-60

Nose Cones
1 BNC-5E
1 BNC-5S
1 BNC-20B
1 BNC-20R
1 PNC-50K
1 PNC-50Y
1 PNC-55AC
1 PNC-60L

Fin Material
2 BFS-20
2 BFS-30
2 BFS-40

Parachutes
1 PK-10
2 PK-12
1 PK-18
1 PK-24

Recovery Equipment
3 Shock Cord 1/8"X18"
1 Shock Cord 1/8"X36"
1 Shock Cord 1/4"X36"
1 Streamer Material 1"X30"
6 Screw Eyes

Miscellaneous
3 Engine Blocks (EB-20A)
3 Engine Holders (EH-3)
3 Engine Holders (EH-2)
1 Engine Mount (EH-2050)
1 Engine Mount (EH-2060)
1 Nose Block (NB-20)
1 Nose Block (NB-50)
1 Stage Coupler (JT-55C)
1 Stage Coupler (JT-60C)
1 Balsa Adapter (TA-2050A)
1 Multi-Purpose Paper Adapter Set (TA-1)
12 Launch Lugs (2-3/8" Long)
1 Alpha Book of Model Rocketry
1 Fin Pattern Sheet No. 2
1 Fin Pattern Sheet No. 3

Ship. Wt. 2 lbs.
Cat. No. 1463

Reg. ~~$18.95~~

Big Foot™

MODEL ROCKET LAUNCH CONTROL SYSTEM

SAVE $2.00
NEW BIG FOOT LAUNCH CONTROL SYSTEM
NOW ONLY $16.95
See Page 23 For Bonus Coupon.

Requires four "D" cell batteries for power (not included).

The all new Estes Big Foot launch control system is capable of launching all Estes models including Maxi-Brutes. Futuristically designed launch platform features rugged plastic construction and enormous "two foot print" for maximum launch pad stability. Includes blast deflector plate, 1/8"X36" two-piece launch rod, swivel mount that is adaptable to either 1/8" or 3/16" launch rods, and legs which remove easily for compact storage. This launch control unit is newly engineered for simple, quick assembly and features safety key, continuity check light, ignition button and 15 feet of launch cable. Uses 4 inexpensive "D" cell batteries and Estes Solar igniters #2301 (not included). Ship wt. 2 lbs.

USES INEXPENSIVE "D" CELL BATTERIES!

Cat. No. 2208 . .

Reg. ~~$18.95~~

7586
ESTES Bonus Coupon
Worth $3.00
Toward the purchase of a MULTI-ROC (# 1329)
(See Page 9) Expires 4-1-'82

7587
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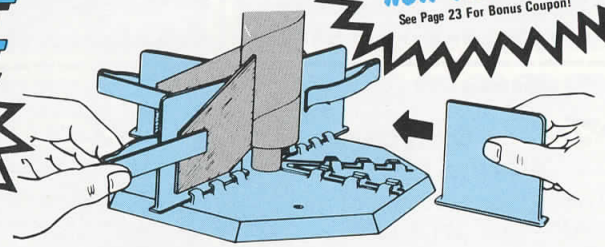

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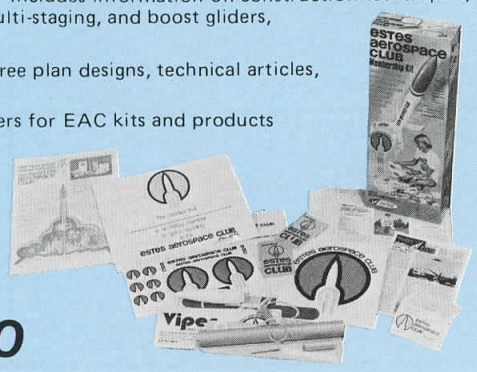

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MYLAR PARACHUTE
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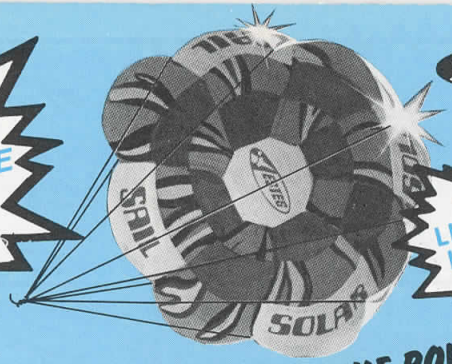
when you purchase any one of these kits.
See page 23 for Bonus Coupon.



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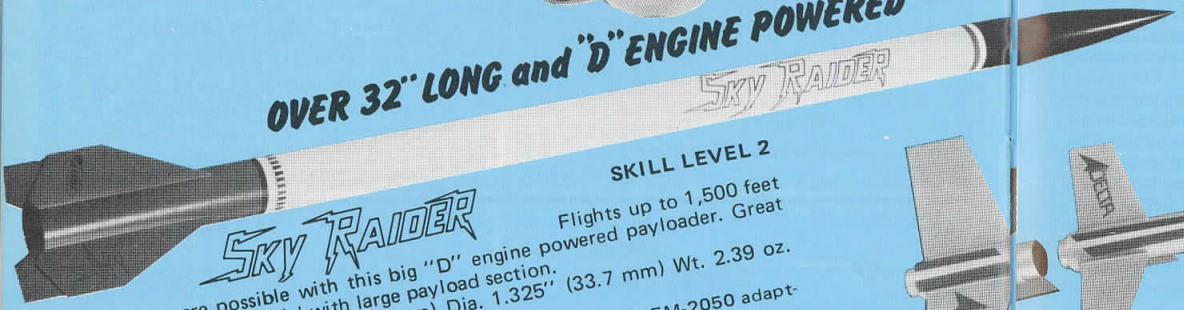
GLEAMS LIKE A JEWEL HIGH UP IN SPACE!

OVER 32" LONG and "D" ENGINE POWERED

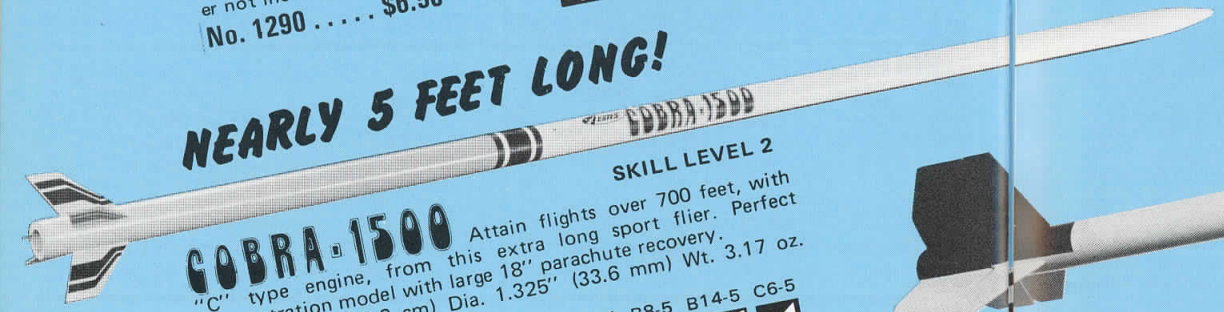


SKY RAIDER

SKILL LEVEL 2

Flights up to 1,500 feet are possible with this big "D" engine powered payloader. Great sports model with large payload section. Length: 32.75" (83.2 cm) Dia. 1.325" (33.7 mm) Wt. 2.39 oz. (67.8 g).
ENGINES: D12-5 D12-7 (1st Flt.) C6-5 (with EM-2050 adapter not included. See page 61.)
No. 1290 . . . . . $6.50

NEARLY 5 FEET LONG!



COBRA-1500

SKILL LEVEL 2

Attain flights over 700 feet, with "C" type engine, from this extra long sport flier. Perfect demonstration model with large 18" parachute recovery. Length: 59" (149.9 cm) Dia. 1.325" (33.6 mm) Wt. 3.17 oz. (90 g).
ENGINES: B4-2 B4-4 (1st Flt.) B6-2 B6-4 B8-5 B14-5 C6-5
No. 1294 . . . . . $7.00

OVER 3 FEET TALL!

BLUE BIRD ZERO

SKILL LEVEL 2

3 feet tall. Easy-to-assemble. Delivers high performance flights and gentle recoveries with big 18" recovery 'chute. Experimental sounding design over Length: 39.75" (101 cm) Dia. 1.325" (33.7 mm) Wt. 2.7 oz. (76 g).
ENGINES: B4-2 B4-4 B6-2 B6-4 (1st Flt.) B8-5 B14-5 C6-5 C6-7
No. 1335 . . . . . $6.75

Engines, Launch Systems, Glue, and Finishing Supplies not included.
Avg. Ship. Wt. 15 oz.

FREE
S.A.R.K. (WORTH $2.75)
when you purchase any one of these high performance Multi-Stagers.
See pg. 23 for Bonus Coupon!

ESTES
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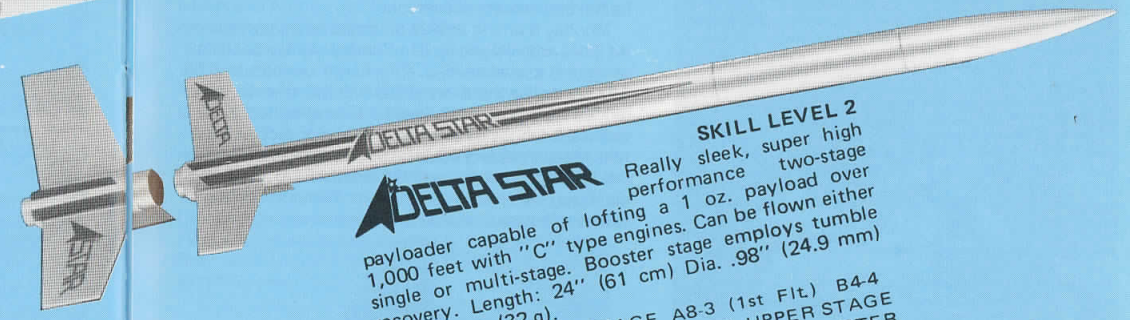
SARK

SKILL LEVEL 1

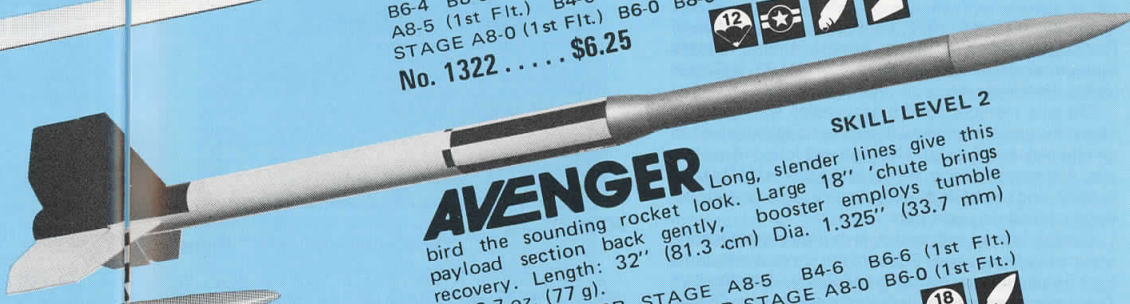
Achieve flights over 1,000 feet with the S.A.R.K. space probe. Easy-to-assemble with streamer recovery. Length: 11.13" (28.3 cm) Dia. .541" (13.7 mm) Wt. 0.5 oz. (13.3 g).
ENGINES: 1/2A3-2T 1/2A3-4T A3-2T (1st Flt.) A3-4T A3-6T A10-3T
No. 0861 . . . . . $2.75 VALUE



DELTA STAR

SKILL LEVEL 2

Really sleek, super high performance two-stage payloader capable of lofting a 1 oz. payload over 1,000 feet with "C" type engines. Can be flown either single or multi-stage. Booster stage employs tumble recovery. Length: 24" (61 cm) Dia. .98" (24.9 mm) Wt. 1.13 oz. (32 g).
ENGINES: SINGLE STAGE A8-3 (1st Flt.) B4-4 B6-4 B8-5 B8-7 B14-5 C6-5 C6-7 UPPER STAGE A8-5 (1st Flt.) B4-6 B6-6 B8-7 C6-7 BOOSTER STAGE A8-0 (1st Flt.) B6-0 B8-0 C6-0
No. 1322 . . . . . $6.25



AVENGER

SKILL LEVEL 2

Long, slender lines give this bird the sounding rocket look. Large 18" 'chute brings payload section back gently, booster employs tumble recovery. Length: 32" (81.3 cm) Dia. 1.325" (33.7 mm) Wt. 2.7 oz. (77 g).
ENGINES: UPPER STAGE A8-5 B4-6 B6-6 (1st Flt.) B8-7 B14-7 C6-7 BOOSTER STAGE A8-0 B6-0 (1st Flt.) B8-0 B14-0 C6-0
No. 1238 . . . . . $6.75

Vigilante

SKILL LEVEL 2

Ultra-high performance two-stage model for flights over 1,100 feet. Sleekly designed upper stage returns via 18" parachute while the booster employs tumble recovery. Length: 26.5" (67 cm) Dia. 1.325" (33.6 mm) Wt. 2.25 oz. (64 g).
ENGINES: UPPER STAGE 1/2A6-4 A8-5 (1st Flt.) B4-6 B6-6 B8-7 B14-7 C6-7 BOOSTER STAGE 1/2A6-0 A8-0 (1st Flt.) B6-0 B8-0 B14-0 C6-0
No. 1278 . . . . . $6.50

Engines, Launch Systems, Glue, and Finishing Supplies not included.
Avg.Ship. Wt. 12 oz.

MODEL ROCKETRY NEWS

FALL 1981
VOL. 21 NO. 3

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Mary Roberts ..... Editor
Charlie Webb ..... Photographer
Rudl Mergelman ..... Staff Artist
Dale Claflin ..... Staff Artist
Audie Griffin ..... Staff Artist

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THE 23rd ANNUAL SPACEMODELING CHAMPIONSHIPS

by Chris Pearson

MIKE PINE hooks up his helicopter duration model.
© Photo Courtesy Alan Williams

On August 9–14, 1981, the National Association of Rocketry held the 23rd Annual United States Spacemodeling Championships, NARAM 23, in Center Valley, Pennsylvania.

Old-time members of the Association who regularly attend the yearly championships may have experienced an odd sense of deja vu. This was well founded, as this site, Allentown College, was also the site of NARAM 18 in 1976, and has been the site of many regional and sectional contests in years past.

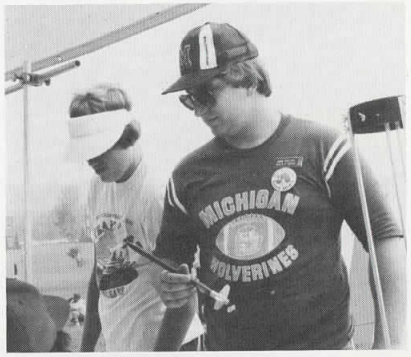
Sunday arrived with participants meeting old friends and making new ones. Some of the contestants came from as far away as California and Seattle, Washington. They were greeted with contestant packets from Charlie Sykos, NARAM 23 Contest Director, as well as information packets from Estes Industries, containing many useful things that would be used during the week of contest flying.

The contest officially opened on Sunday afternoon with demonstration launches, including the Estes manufacturer demonstration showing all their new line of kits. Jeff Flygare, Estes Representative, presented the narration concerning the kits that were being flown, while several local television stations taped flights and other happenings for segments on that evening's news. Jeff's picture appeared in the Allentown paper the following day.

After the demonstration launch, out came the radio controlled boost gliders to be test flown for E Engine Boost Glide, which would be held later during the week. Radio controlled gliders have surged in popularity in the past two years, particularly because of the U.S. victory at the 1980 Internats in this event, and because of the declining cost of high-quality digital radio control equipment.

Sunday evening brought the Contestants' Meeting, and later slides and films were shown in the dormitory for the amusement of everyone.

Monday morning arrived much too soon, particularly for those who stayed up late Sunday night to build, talk or renew acquaintances. The range opened at 8:00 A.M., and soon the air was filled with Streamer Duration models. The goal of this event is to keep a model in the air for the longest time using a streamer recovery system. Many modelers could be seen cutting long strips of thin tissue paper to be used in the small BT-5 sized models, flown with 1/2A3-4T engines. Times in excess of two minutes were needed to win this event.



JOHN PHILLIPS with his class B altitude model.
© Photo Courtesy Alan Williams

In the afternoon, A Helicopter Duration was flown. In this event the model, boosted by an A engine, must rotate like a helicopter to slow its descent. Many innovative designs are seen in this event, but all the winners had a standard fixed rigid wing rotor.

During the day, many contestants were seen trodding to the local department stores in Allentown to buy blankets and pillows, as they neglected to bring them, and they were not provided by the college. The air conditioning in the dormitory worked very well, and this caused many cold feet during the night.

Tuesday opened with B Engine Altitude. This one is simple. Try to get a model to the highest altitude and get it tracked. Harry Rose had his model tracked to 510 meters, while his father, Art did even better with a track of 535 meters. The models had to be exceptional to place in the top four.

That afternoon, B Engine Payload was flown. The object of this is to fly a one ounce weight to the highest possible altitude. Many modelers chose to use A10-0T/A3-4T staged combinations, while others opted for regular B6 or B8 engines. This proved to be a very challenging event, as well as a popular one.

Tuesday night was the Manufacturer Open Forum which gave the modelers attending the contest a chance to ask the company representatives about their products. Attendance was high, and the questions kept the reps on their toes. Jeff Flygare fielded the questions regarding Estes Industries, as modelers bombarded him with questions regarding everything from AstroCams to new kits and engines.

On Wednesday, the only event flown was 1/2A Engine Boost Glide. This is an extremely challenging event, because of the low-power of the engine. It turned out to be a fight between the fixed wing advocates and the flex-wing people. Flex wings are becoming more popular in the 1/4A and 1/2A events, as they are easier to build and fly better than the traditional fixed wing types. As expected, the "flexies" blew the fixed wing gliders away, with one racking up a time of 549 seconds, which was built by Jeff Vincent. The other event of the day was cancelled because of rain.

Glider fever continued on Thursday with the flying of B Engine Boost Glide for the A Division and E Engine Boost Glide for B and C Divisions. Many of the contestants were flying radio controlled gliders, boosted by staged D12 engines. Many of the engine pods featured remote release controlled from the ground. Among the contestants in this event were several members of the 1980 United States Internats Team, Chris Morgan, Phil Barnes, George Gassaway and Matt Steele. Chris and Phil, who flew this same event in 1980 at Lakehurst, New Jersey against teams from many other countries, won the event in their division.

GEOFREY LANDIS with his radio controlled Eagle Boost Glider. **© Photo Courtesy Alan Williams**

After the glider flights were over, 1/2A Engine Parachute Duration was flown. Keeping a model up in the air for a maximum time of two minutes may sound easy, but only the Zunofark Team, consisting of George Gassaway, Matt Steele and Chris Johnston were able to do it three times to win in their division.

Thursday night brought the Research and Development presentations. Contestants do experimental work on various aspects of the hobby of model rocketry and present their findings. Generally, no model flying is involved, but this year, the winning C Division report by Harry Rose was about boost-glider pod design.

The final day of competition featured A Engine Rocket Glide first. Rocket gliders differ from boost gliders in that the rocket glider must not eject its engine or pod, that is, it must remain in one piece all during its flight. In the ten years since this event was started, many designs have been formulated, and many of the "standard" ones were seen at NARAM, and generally, these were the ones that won the event.

The final event of the contest was D Engine Scale Altitude. Modelers spend many hours of fine detail work on their models of actual rockets and then attempt to fly them to the greatest altitude to win. The most popular designs were Vipers and Sandia Sandhawks. A Sandhawk is what C Division winner, Chas Russell flew with a D12 engine to get the highest altitude of the event. The Zunofark Team, second place C Division winner also flew a Sandhawk. Chris Pocock of Washington state, flew his beautiful scale Jayhawk, a Navy target drone, which actually placed first in static points, but was pushed back to third place by the superior altitude of the Sandhawks.

NARAM 23 Award winners.
© Photo Courtesy Alan Williams

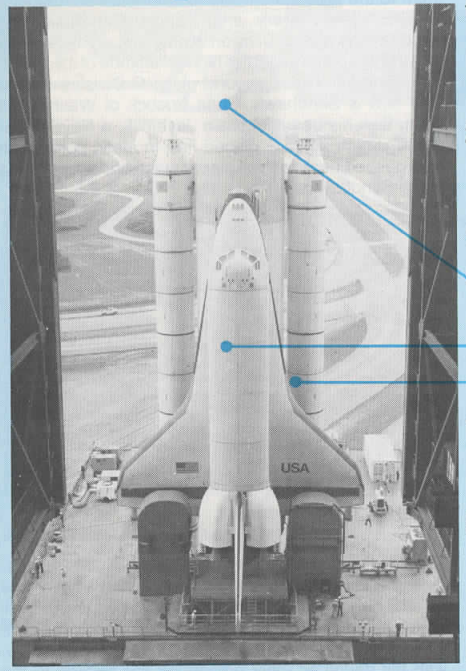
After the dust of Scale Altitude settled, the contestants returned to the dormitory to get ready for the awards banquet. Held at the college and catered, it was an exceptional meal. Leading the awards was the contest director, Charlie Sykos, at this point losing his voice, with his daughter Patty presenting the awards to the winners. Also present were Vern and Gleda Estes, J. Patrick Miller, President of the National Association of Rocketry, along with representatives from Aerojet General and Rockwell, who donated many of the award trophies.

In A Division, Pat Peterson won the National Championship, with a great showing at NARAM this year. B Division saw George Riebesehl Jr. take the big one, with what had to be the most tightly contested points race of the season. In C Division, Harry Rose won the championship, showing that model rocketry is not necessarily a hobby for young people. The team award went to the Zunofark Team, consisting of George Gassaway, Matt Steele and Chris Johnston, winning with the greatest point spread ever recorded. The Section Championship was awarded to Pulsar, one of the host sections, while Reserve Championship was awarded to the Wheaton Association of Rocketry. The George Galloway Memorial Award, presented to the person or people who have done the most for the hobby in the past year, went to the editor of the Association's newsletter, the Model Rocketeer, Chris Tavares. The LAC Newsletter Trophy, awarded for the best rocketry newsletter was presented to Lawrence Bercini, editor of the Tarheel Rocketeer. In the humorous award category, the "Best Midwest Qualified Flight Award" went to Chris Cox, and the first annual "Range Rat Award" went to Karen Fox, daughter of Richard and Joy Fox.

Saturday saw the contestants packing to leave, shaking hands and vowing to see each other at NARAM 24 next year.

NARAM 23 was a contest that contest director, Charlie Sykos, and host sections, Pulsar and Wheaton Association of Rocketry can be proud of. The events went smoothly and a good time was had by all.

Stump Your Teacher Quiz



1. Q. What is the name given to the prototype Space Shuttle which was used in the drop tests but which was never launched into space?
   A. Enterprise

2. Q. The first manned launch of the Space Shuttle Columbia occurred on what date?
   A. April 12, 1981

3. Q. Identify the parts indicated:
   A.
   1. External Tank
   2. Space Shuttle Orbiter
   3. Solid Rocket Booster

4. Q. Give the name of the first Space Shuttle to be launched into Earth orbit.
   A. Columbia

5. Q. Name the commander and the pilot of the first manned Space Shuttle launch.
   A. John Young — Commander, Robert Crippen — Pilot

NASA Photo

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Illustrations of ideas for the Idea Box and cartoons should drawn in ink and no smaller than 4 inches by 4 inches. Technical articles and contributions should be well written and photos accompanying the articles should be packed between cardboard sheets to avoid damage.

All contributions become the property of Estes Industries and cannot be returned. Address all material to: MRN Editor, Estes Industries, Penrose, CO 81240.

Should your article, idea or cartoon be used in MRN, we'll reward your efforts and talents with an Estes Merchandise Certificate, the amount of which will be determined by the MRN editorial staff.

Hope to hear from you soon!

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To receive our seasonal mailings you must be an active Estes mail-order customer which requires you to have placed an order for Estes merchandise within the past four months.

Additional Bonuses . . . All orders received on even numbered months (February, April, June, etc.) will be returned with a "free" plan to help increase your Estes fleet. These new plans feature a variety of designs from single-stage sport models to far-out exotic rockets you will be proud to display. All "free" plans can be constructed from the Estes hi-performance parts and accessories listed in our catalog.

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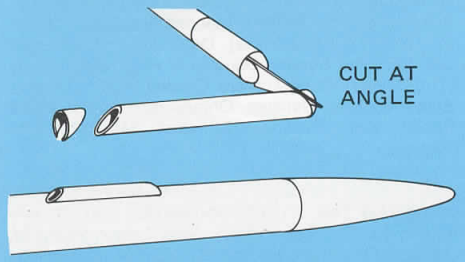
Remember . . . these items are available only with return mail-orders!!!

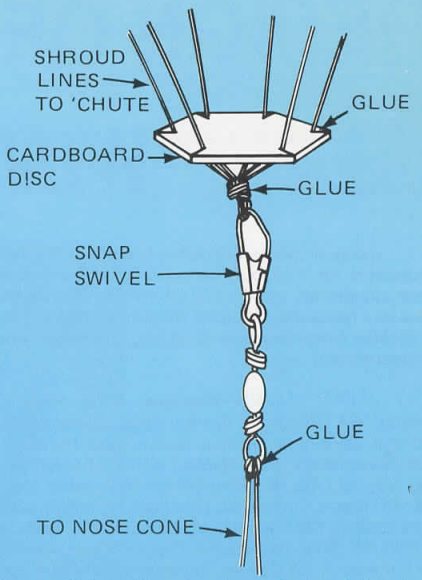
The Idea Box

When painting plastic nose cones, wipe them with paint thinner to remove oil from handling and allow to dry. Paint will adhere more smoothly.



To increase the altitude your rocket will reach, cut the ends of the launch lug at an angle before attaching it to the rocket.

By: Steve Demeter, Parma, OH



To prevent shroud lines from becoming tangled, make a cardboard disc like the one illustrated and run shroud lines through it before flying your rocket.

By: Keith Kearns, Newark, TX

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DESIGN OF THE MONTH

WINNERS

Congratulations to another fine group of Estes Rocketeers for their outstanding DOM entries. First place winners will receive $75.00 merchandise certificates and honorable mentions will be awarded $10.00 certificates. Keep those entries coming, maybe you'll be our next winner!

JUNE 1980—**Winners:** Brian Stearns, Monroe, WA (Rogue II). Gordon Bugg, Gadsden, AL (Odinfal). Jayson Hill, Opelika, AL (3 Position Multipad). Nick Shewchenko, Hull, Quebec (Corvus II). Jeff Eissing, Crystal Lake, IL (Ring Thing). **Honorable Mention:** Bill Dietze, Gretna, NE (The Pocket Rocket). Mike Noel, Golden, CO (Gy-ronimo). Nathan Chan, College Station, TX (Nike-Tomahawk). Darcy O'Toole, Arnold, KS (no name). Bill Czagas, Burlington, NC (Blue Falcon). Ernest Rosenquest, Bridgeton, NJ (Burgundy Bi-Bullet). Steve Farrington, So. Burlington, VT (Voyager 2190). Ian Sonnerville, Medicine Hat, Alberta (Sunflyer I). Kris Bullock, Upland, IN (Swingfire). Mark Bigelow, San Lorenzo, CA (Blue Phantom). John Pinson III, Gadsden, AL (Black Widow). Steve Kimos, Balto, MD (Cerberus). Tim Duchene, Kankakee, IL (Double Trouble). Jeff Wachtel, Tobias, NE (The Voyager). Robert Robba, San Jose, CA (The Bomb).

JULY 1980—**Winners:** James E. Fesmire, Northport, AL (System-Fred). David P. Scheetz, Northampton, PA (Eagle Experimental 2). Brad Smith, Tecumseh, MI (Accelerator). Steven Jochums, Roanoke, IL ("Star Wars" Y-Wing Fighter). John R. Dick, Olympia, WA (Launch System). Po Eng, New York, NY (Solar Launch Controller). Kris Bullock, Upland, IN (Blow Pipe). Kenneth A. Detroit, Bend, OR (Kadcom-Satellite Launch Vehicle). **Honorable Mentions:** John Beggs, Franklin, PA (Voyager). Mile Silliman, Maryville, MO (Blue Angel). Philip Chen, Plantation, FL (Minerva). Lee Madeline, Attica, MI (Odyssey H-05). Mark Gosselin, Federal Way, WA (Blue Knight Tri-Fighter). Steve Hahn, Hastings, NE (Chimera). Ronald Stewart, Albany, LA (Orcrist). James R. Fierro, Longwood, FL (Air Brake Recovery Model). Joseph L. Warnock, Independence, KS (Warnock). Robert Black, Indianapolis, IN (Gemini). Bruce Henson, Burkesville, KY (Centurion Battlecruiser). Patrick Rhode, Piper City, IL (Aryan). John D. Rolph, Ontario (Arindale). Chris Stack, Bay City, MI (Star Piercer).

AUGUST 1980—**Winners:** Robert Hermanoswski, Uniontown, OH (Titan/Centaur). Curtis A. Giametta, New Orleans, LA (Camelian). Todd Schowacter, Chesterfield, MO (Skyshooter). Steven Luis, Miami, FL (Tar Destroyer 180). Ray Colbert, Jr., Omaha, NE (Solar Mirror). David Muhr, Eric Wood and Glenn Shenefelt, Cheyenne, WY (Sigma III Launch Control System). **Honorable Mention:** Tom Hansen, Camp LeJeune, NC (Gemini 3). Andrew J. Meyer, Cabool, MO (Super Streak). Keith Mac Donald, Jacksonville, FL (Smoker). James Jacobson, North Greece, NY (China ICBM1). Jimmy Kern, Baltimore, MD (Venus Voyager). Jeff C. Dotson, Maple Valley, WA (The Ultimate Launch System). Patrick Peterson, Schaumberg, IL (Heli-Roc). Bennett Hirschhorn, Miami, FL (The Weasle Machine). Dana Johnson, Presque Isle, ME (Star Streak). Douglas S. Pisik, Deerfield, IL (The Belstar). Craig Travers, Constable, NY (Shuttle). Blake McCraw, Oshawa, Ontario (G-Force Measure Scale). Keith Skelton, Rochester, MI (AAM-N-10 Eagle).

SEPTEMBER 1980—**Winners:** Neal Wang, New York, NY (Star Shuttle) Rey Kyle, Satellite Beach, FL (Starship Jupiter). Carey Lotzer, Mesquite, TX (Lunar Excursion Module). Kurt Zimmerman, Allison Park, PA (Gemini II). **Honorable Mention:** Kenneth Quinette, Fullerton, CA (Quin-Star). Andrew Aube, Ellington, CT (Shroud Line Reinforcer). Peter Behmer, Sault Ste. Marie, MI (Nova). Kevin Longfield and Kendall Smith, Rochester, MI (Pluto Express). Kevan Katwin, Clovis, CA (Launcher). Robert Simon, Valencia, PA (Simon Rocket). David Linde and Bill Bugan, Evergreen Park, IL (Comet). Mike Ecker, New Brighton, MN (KK Rocket). Shawn Lawlor, River Heights, UT (Corellion Stellar Probe).

OCTOBER 1980—**Winners:** James Dulfer, Melbourne Beach, FL (Tiger 211-C). Keith Cooke, Oakville, Ontario (Phantom 504 Striker). Steve Davis, U.S.A.F. Academy, CO (Box-Topper II). G. J. Sunday, Ann Arbor, MI (Phaethon). **Honorable Mention:** Simon Shepherd, River Falls, WI (The Heap). Conal Larkin, New Rochelle, NY (Presidential Rocket). Kyle Vedane, Huntsville, AL (Raven). Michael C. Reynolds, Danbury, CT (Long Range Patrol). Kurt Weaver, E. Springfield, PA (Explorer). Daniel Bisbee, Chesterfield, MA (Exodus). Scott Turk, Lynbrook, NY (Molecular). Lee Madeline, Attica, MI (Madeline Supreme). Eric Voth, Bloomington, MN (Star Liner). Michael Dillon, Middletown, CA (Starblazer). Kent Wetherwax, Middletown, CA (Delta).

NOVEMBER 1980—**Winners:** Chris Hoffman, Xenia, OH (Omni Star Cruiser). Fritz Mueller, Columbus, GA (Cargo Bird). Joseph Brundage, Corning, NY (Fat Boy Model Rocket). Jimmy Moore, Texarkana, AR (Plunger). Bernie Schwarz, Grinnell, KS (Spitfire). David Lawson and Stuart Carr, Port Coquitlan, BC (Porta Cluster 4). David H. Butler, Jr., Lake Mohegan, NY (Titan II). Jim Tibbs, Sandpoint, ID (Oberon). **Honorable Mention:** Lon Tacy, Hampton, VA (Torellian Scout). Jason A. Herring, Kenosha, WI (Nike Athena). Sam Hahn, Northbrook, IL (Voyager II). Doug Toth & Peter Nestinger, Lorain, OH (Quaazzar 277). Robert Heil, Ukiah, CA (Challenger). Ron Reiserer, Ontario (Sky Savage). Kristian Sorensen, Summerville, SC (Villain). Eric Kass, Warwick, RI (Kryptoñ II).

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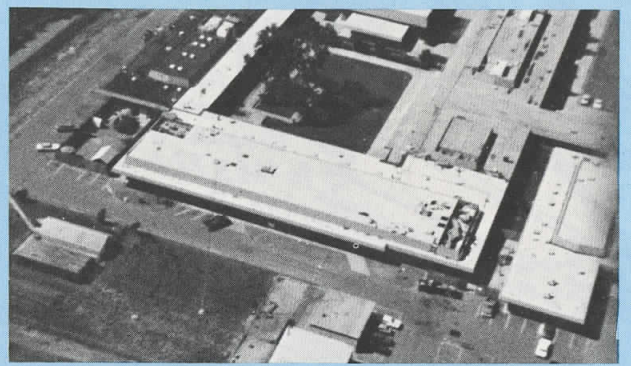
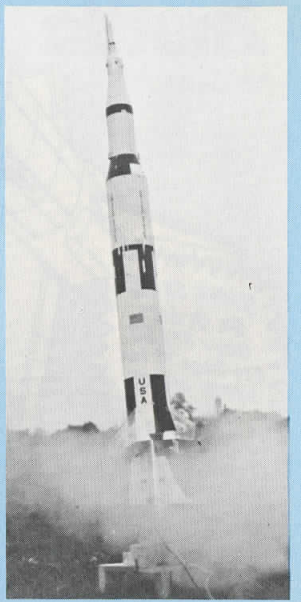
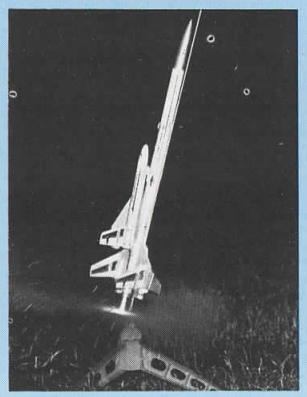
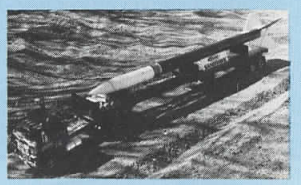
PHOTO CONTEST

$500.00 in free Estes Merchandise to be awarded to the 20 best entries. Here's your chance to win $25.00 worth of Estes rocket supplies and equipment while displaying your skills in model rocketry photography. To enter simply follow the rules listed below:









RULES:

1. Photographs, slides, or AstroCam 110 photos are acceptable. All entries must deal with some aspect of model rocketry. Please do not send movie films or negatives.
2. You may enter as many times as you like.
3. Employees of Estes Industries or members of their immediate families are not eligible.
4. All entries become the property of Estes Industries. We will return entries if requested and a self-addressed, stamped return envelope of the proper size is included.
5. Pack entries carefully - use cardboard for added protection. Entries should be marked "Photos enclosed". Note: Estes cannot accept responsibility for lost or damaged entries.
6. Entries will be judged for visual impact, composition, and originality of model rocketry subject matter.
7. A $25.00 Merchandise Certificate will be awarded to the best 20 entires. Decisions of the judges are final.
8. Winners will be announced in a future issue of Model Rocket News.
9. Be sure to include your name, age, address, city, state and zip code with each entry. Please include your Skill Level if you are an EAC member.
10. Mail entries to:
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    Penrose, CO 81240
11. Deadline for receipt of entries is midnight December 31, 1981.

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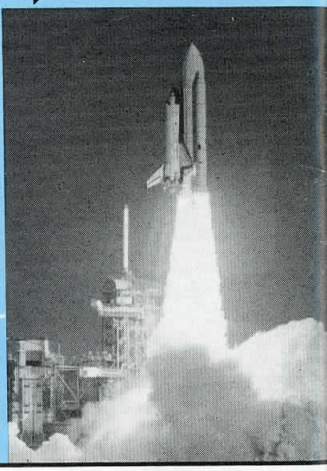

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